a geological study, the fruits of which appeared in 1902 in a two-volume work entitled "Asiatic Russia." The relations of science and religion were also discussed by him in several of his publications.

We regret to announce the death, on May 28, at sixty-four years of age, of Mr. R. E. Dennett, author of "At the Back of the Black Man's Mind," "Nigerian Studies," "West African Categories," and other works.

Notes.

Owing to the postponement of the sailing of the *Celtic,* on which he had booked his passage from America, Prof. Einstein is unable to lecture at King's College, London, until Monday, June 13, at 5.15 p.m. All the tickets which have been issued for June 9 will be available for that date.

Several changes have recently been made in the scientific staff of the Australian Museum, Sydney. Dr. C. Anderson, who has been mineralogist since 1901, succeeds the late Mr. R. Etheridge, jun., as director. Mr. A. Musgrave fills the vacancy caused by the death of Mr. W. J. Rainbow, entomologist, and Messrs. J. R. Kinghorn and E. le G. Troughton, second-class assistants, have been promoted to be first-class assistants in charge of reptiles, birds and amphibians, and mammals and skeletons respectively.

Mr. W. L. G. Joerg, of the scientific staff of the American Geographical Society of New York, and editor of its Research Series, left on May 21 on a six months' leave of absence for a trip to Europe on behalf of the society to study the present status and tendencies of geography in Europe and to establish closer relations with kindred workers and institutions. During his trip Mr. Joerg expects to visit most of the universities where modern scientific geography is represented. Communications to him may be addressed c/o Messrs. Brown, Shipley and Co., 123 Pall Mall, London, S.W.1.

At the anniversary meeting of the Linnean Society of London on May 24 the Linnean gold medal of the society, the highest award in its gift, was presented to Dr. Dukinfield H. Scott, and all who know the value and extent of his services to recent and fossil botany during the last forty years will agree that the award is thoroughly deserved, and some may be disposed to wonder why it was not bestowed earlier. The medal was instituted in 1888 on the occasion of the centenary of the foundation of the society, and is given in alternate years to a botanist and a zoologist who at the time of the award is not on the council. Dr. Scott's services as councillor, secretary, and president of the society have been almost continuous, so that the opportunities of making the gift have been very few until the present year.

The Mount Everest Expedition started from Darjeeling in two parties on May 18 and 19. The staff of the expedition consists of Col. Howard Bury, the leader, Mr. H. Raeburn, Dr. Kellas, Mr. G. L. Mallory, and Mr. G. H. Bullock, Alpine climbers; Mr. A. F. Wollaston, surgeon and naturalist; Dr. A. M. Heron, geologist; and Major H. T. Morshead and Capt. O. Wheeler, survey officers. Col. Bury's first dispatch to the *Times* contains particulars of the organisation and start. Major Morshead, with two assistants and fifty coolies, left Darjeeling in advance, going by the Teesta Valley to correct some of the Sikkim maps. He was to rejoin the main expedition on June 1 at Khamba Dzong. The principal transport of the expedition consists of 100 Chinese and Tibetan mules, with drivers drawn from hill tribes and accustomed to long marches. Forty Sherpa coolies, mostly from villages south or south-east of Everest, accompany the expedition. Several of them have been with Dr. Kellas on high climbs and are trained in ice-work. Mr. Wollaston is taking two Lepcha collectors and skinners to assist in biological work. The expedition has a complete photographic equipment, and every camera can be used for telephotographic work. Arrangements have been made for developing the plates and films on the spot. Col. Bury records with gratitude the help afforded by the Government of India, the Indian railways, and the Governor of Bengal (Lord Ronaldshay).

The secretary of the Institution of Electrical Engineers informs us that, in view of the continuance of the coal strike, the Scottish Committee has reluctantly decided to cancel the proposed summer meeting of the institution.

The autumn meeting of the Iron and Steel Institute will be held, by invitation of the Comité des Forges de France, in Paris, on Monday and Tuesday, September 5 and 6. At the conclusion of the meeting in Paris alternative visits have been arranged to works in Lorraine and in Normandy, and a party of the members has been invited to visit the Creusot works of MM. Schneider and Co

Two notices of memorials to distinguished men of science appear in the *Revue scientifique* of May 14. The first refers to the monument erected to the memory of Wurtz the chemist at Strasbourg, which will be dedicated on July 5 next. The other notice deals with the centenary of Ampère's discoveries in electricity. Electrical engineers in France are taking steps to restore the tomb of the celebrated physicist in the cemetery of Montmartre.

The annual meeting of the British Science Guild will be held at the Goldsmiths' Hall on Wednesday, June 8, at 3 p.m. Lord Montagu of Beaulieu, president of the Guild, will present the annual report, and there will be addresses by the Very Rev. William R. Inge (Dean of St. Paul's) on "The Road to Ruin and the Way Out" and by Sir Richard A. S. Redmayne (chairman of the Imperial Mineral Resources Bureau) on "The Importance of Research in Promoting the Development of the Mineral Industries." Tickets may be obtained from the Secretary, British Science Guild, 6 John Street, Adelphi, W.C.2.

AT the annual meeting of the Royal Society of Victoria, held on March 10 last, the following officers were elected:—*President:* Prof. Ewart. *Vice-Presidents:* Mr. F. Wisewould and Prof. Laby. *Hon. Treasurer:* Mr. W. A. Hartnell. *Hon. Librarian:* Mr. A. S. Kenyon. *Hon. Secretary:* Mr. J. A. Kershaw. *Members of Council:* Prof. Osborne, Dr. Summers, Dr. Baldwin, Mr. Dunn, Mr. Richardson, and Mr. Picken. In the annual report it was announced that the scheme for giving short popular lectures on subjects of general interest would be continued. At the ordinary meeting which followed Sir Baldwin Spencer contributed a paper entitled "Blood and Shade Divisions of Australian Tribes."

IT is announced that Mr. Bridgeman, Secretary for Mines, has appointed an Advisory Committee for the Metalliferous Mining Industry, of which Sir Cecil Lindsay Budd is chairman. In addition to representatives of owners and of workers in mines and quarries, the following have also been appointed:—Mr. T. Falcon, Dr. F. H. Hatch, and Mr. F. Merricks, mining engineers; Mr. F. W. Harbord, metallurgist; Mr. T. C. F. Hall, Prof. H. Louis, and Dr. J. M. Maclaren, economic geologists; Mr. J. J. Burton, representing the iron and steel industry; and Sir Kenneth W. Goadby, representing medical science. Mr. F. C. Starling, of the Mines Department, will act as secretary to the Committee.

THE London University College Hospital Ladies' Association was founded twenty years ago "to provide clothes for use in the wards, and also for necessitous patients on their convalescence or discharge from the hospital," and "to take up any other work in connection with the hospital which from time to time may commend itself to a general meeting of the association." It has been remarkably successful. There are now some eight hundred members; besides the central London body, there are ten local branches. The latest development is the establishment of the infant welfare department. Like all other London hospitals, University College Hospital is in financial difficulties. In order to help, the Ladies' Association has arranged to hold a sale on Wednesday, June 8, from 11.30 a.m. to 7 p.m. at Someries House, Regent's Park. Her Highness Princess Helena Victoria has graciously consented to open the sale. The things offered for sale will be of a varied nature, including fruit and other farm and garden produce. There will also be some special features, such as an antique stall and a second-hand book stall which may interest our readers.

ON April 2 last, the Governor-General of New Zealand, Lord Jellicoe, formally opened the Cawthron Institute in Nelson, South Island. The institution was founded under the terms of the will of the late Thomas Cawthron (NATURE, January 1, 1920, p. 442) to provide a place for teaching and carrying out scientific research relating to the industries of Nelson and of the Dominion. Lord Jellicoe paid eloquent tribute to the great public generosity of the late Mr. Cawthron, and then spoke of the importance of scientific research. For an agricultural community to achieve success the agriculturists must co-operate with men of science. The work undertaken in the new institute will deal largely with problems of agriculture, fruit-growing, etc., and should therefore exert great influence on the prosperity of the whole of the Dominion. The Bishop of Nelson, who is chairman of the trustees, also addressed the gathering, and made particular mention of the library of scientific books belonging to the institute, which it was hoped, when completed, would be the best in Australasia. Prof. Easterfield, director of the Cawthron Institute, gave a brief outline of the many lines of research now occupying the attention of the staff; soil surveys, experiments with fertilisers and cover-crops, fire-blight, the deterioration of trout, fruit pests, and the utilisation of flax-waste were among the problems mentioned.

THE *Geographical Review,* issued by the American Geographical Society of New York "upon the adoption of a programme of intensive research," has in the present year ceased to become a monthly periodical; in future it will be issued as a quarterly. We welcome this change of form, as it gives an opportunity for more detailed papers on the subjects to which this valuable publication is devoted. In its new form it contains several important articles, one of the more interesting being an elaborate essay on "The Evolution and Distribution of Race, Culture, and Language" by Dr. Griffith Taylor, of the University of Sydney. This article raises questions which it is impossible to criticise in detail. The author proposes to show that "many current opinions with regard to the mixing of nations are not supported by ethnology." On the problem of the half-caste he is disposed to think that "in many cases the ethnic deterioration is too slight to be important, and that racial antipathy rather than racial degeneration is largely to blame for the troubles of the Eurasians. As regards the Alpine, Mongolian, and most Amerind and Polynesian peoples, the future seems to me to be most promising. It is our diseases and our vices, especially the use of alcohol, which constitute the so-called 'overpowering effect of the white civilisation upon the uncivilised nations."

A PARAGRAPH in NATURE of July 1, 1920, p. 558, referred to a report of the Smithsonian Institution in which Mr. C. M. Hoy made some comments on the extermination of Australian native fauna. We quoted some of Mr. Hoy's remarks, concluding with the words:—"There are very few game laws in Australia, and no one gives any attention to the ones that are in order." The Minister of Industry, South Australia, afterwards wrote through his secretary objecting to Mr. Hoy's statement, and his letter was published in NATURE of November 18, 1920, p. 377. Mr. Hoy in a communication dated from Sydney, New South Wales, on March 12, claims that his original statement was correct, and adds:—"Everywhere I went in South Australia I found flagrant disregard of the Animals and Birds (Protection) Act, not only in the 'out-back areas,' but within a few miles of Adelaide itself." As Mr. Hoy's notes were originally published by the Smithsonian Institution, and we merely quoted from them, his letter was submitted to the institution, the acting secretary of which now informs us under date May 7 that "while Mr. Hoy is collecting specimens in Australia for the Smithsonian Institution, he is in no sense an officer of the institution." A letter has therefore been sent by the institution to the Minister of Industry, South Australia, expressing regret that anything written by Mr. Hoy should have led to misunderstanding, and gratefully acknowledging "the kind assistance given Mr. Hoy both by the authorities and private citizens in the various parts of Australia which he has visited."

Sir Hercules Read in his presidential address to the Society of Antiquaries (*Antiq. Journal,* vol. i., pp. 167–82, July, 1921) avails himself of his approaching freedom to deliver some home-truths. "The contents of a museum take precedence of the building that contains them." Disregard of this principle and of the views of the museum officers by two distinguished architects has made the Victoria and Albert Museum and the northern annex to the British Museum "deplorable and costly mistakes." (Sir Hercules says this would not occur in the case of a laboratory. Well, there is such a building recently erected to the plans of one of these architects in which the best light is given to passages and the windows of the work-rooms are obscured by useless balustrades and overhanging arches.) The Government has allotted to London University a site that will soon be required by the expanding British Museum. Congestion may be in part relieved by removing objects from exhibition into store; but this is only to postpone the inevitable removal of either the museum collections or the national library to another site. Lastly, the recent trouble with Scotland over a battered gravestone leads Sir Hercules to condemn the stringent embargo which several countries have laid on the export of all—even their most trivial—antiquities. At any rate, we shall all agree that for the British Isles, if not for the British Empire, the British Museum should be the centre where a complete representation of all products of Nature and art can be seen. We need, instead of competition, intelligent co-operation between the various museums.

The mode in which the narrow-mouthed lamprey (*Geotria stenostoma,* Ogilby) ascends waterfalls is described by Mr. D. A. Herbert in the Journal of the Royal Society of Western Australia (vol. vi., part i., 1920). The animal can obtain hold only on a wet surface, and the cutting off of the water by a hand placed above the fish causes it at once to drop back into the pool. Two excellent photographs are given of the toilsome climb.

In a second important paper on the structure of the Andes (Quart. Journ. Geol. Soc., vol. lxxvi., p. 1, 1920) Mr. J. A. Douglas points out that the Alpine type of overfolding cannot be traced in the Andean Cordilleras, and that the chain is due to vertical uplift between two ancient resistant masses which from time to time have compressed a series of transgressive deposits between them. The author continues the fine series of photographic plates that characterised his previous paper published in 1914.

Dr. C. D. Walcott, secretary of the Smithsonian Institution, has informed the Rev. T. R. R. Stebbing that since the appearance of Raymond's memoir on the trilobite he has reviewed his own trilobite sections, and also cut a number of additional sections, one of which, fortunately, cuts across the exopodite so as to show its structure and the relations of the fringe of filaments to the spiral arm. Other sections indicate that the ventral limb was formed of a coxopodite, endopodite, and exopodite, and, in addition, a short, flat epipodite with numerous long, strong filaments. Dr. Walcott has also succeeded in securing photographs of the epipodites of Neolenus, which illustrate the difference between them and the exopodite.

An interesting paper by Mr. Leslie Scott on "Agricultural Co-operation" appeared in the April issue of the *Fortnightly Review.* In the author's opinion, the farming community—especially the class of small farmers—exerts a considerable stabilising influence in the nation, and it is therefore highly desirable that this class should be maintained. Farmers have to face foreign competition, and they have to stimulate home demand; the best way to do these two things is to cut down wherever possible the expenses incurred in distribution and in the purchase of feeding-stuffs, etc. "Factory" farms reduce production costs, but they also eliminate the small farmer, for the factory farm consists of 10,000–20,000 acres farmed by a manager appointed by some company. Agricultural co-operation seems to be the only method by which economic production can be attained and the small farmer preserved at the same time. A great deal is done by such co-operation in Denmark, and there are a few agricultural societies doing good work in this country, but there is a great need for union among these different societies. They are now being joined up in the Agricultural Wholesale Society, and as soon as the farmers put implicit trust in their own societies and the societies place equal trust in the central body, then the wholesale society—provided that it is adequately capitalised—will be able to make practically its own terms in the markets both of this country and of the world.

The Douglas fir, *Pseudotsuga Douglasii,* the most valuable conifer in western North America, is now planted extensively by foresters in this country, as it produces a large volume of timber in a short period of years. Until recently this tree enjoyed practical immunity from both insect attack and fungus disease, but this happy state no longer exists, and it is necessary now to sound a warning that unless preventive measures are taken, great disaster may befall plantations of this species. Such has happened in the case of the white pine, *Pinus strobus,* an American tree that can no longer be commercially planted in Europe on account of its liability to succumb to the deadly fungus *Peridermium strobi.* The Douglas fir is becoming infested in the South of England with a woolly aphis, *Chermes Cooleyi,* which was first noticed in 1914 in the New Forest. Its spread since then has been alarmingly rapid, and isolated attacks were noticed last summer in Peeblesshire. It is distressing to hear also of a fungus which has been doing considerable damage of late years to young plantations of Douglas fir in many parts of Scotland. This either kills the leading shoot a few inches below the tip or causes the death of the whole tree by attacking the outer tissues completely round the stem at a little distance above ground-level. In both cases there is a sudden decrease in diameter in passing from the healthy to the diseased portion of the stem, accompanied by much exudation of resin. This fungus is described as a new species, *Phomopsis pseudotsugae*, by Dr. Malcolm Wilson in the Transactions of the Royal Scottish Arboricultural Society (vol. xxxiv., part ii., pp. 145–49, plates iv.–v.) published in November last. Early recognition of the disease and burning of affected trees are the measures recommended for stamping out this pest, which has been known to kill half the trees in a young plantation.

A LENGTHY paper on "The Perishing of Paper in Indian Libraries" forms part vii., vol. iii., of the Journal of the Indian Institute of Science. The investigation was undertaken at the Institute of Science on behalf of the Government of India by Mr. J. J. Sudborough and Miss M. M. Mehta. "Perishing" is defined as a brittleness which is so marked that folding the paper once or twice will cause it to break along the fold, and it is observed in many of the books in record offices and libraries. The conclusions which the investigators have arrived at as the result of an examination of numerous libraries in India do not differ greatly from the report of the Committee on the Deterioration of Paper in Europe published in the Journal of the Royal Society of Arts for 1898 (No. 46), or from the report of a similar committee in America which appeared as Report No. 89, Pub. 1909, U.S. Department of Agriculture. Chemical perishing, as distinct from the destruction caused by micro-organisms, was investigated, and the conclusion arrived at is that the former type of perishing, which is by far the commoner, is due to hydrolysis of the cellulose molecules of the paper and their later decomposition into simple substances rather than to a process of oxidation. The type of paper found to be most resistant in India is a rag-paper the fibres of which have not been weakened in the process of manufacture. Treatment which has been found to damage the fibre is prolonged digestion with alkali, over-bleaching, non-removal of the last trace of bleach by antichlor, and imperfect washing that leaves traces of acid in the paper, while rosin and filling material should not exceed a small fixed percentage. It is recommended that all books and documents of permanent value should be removed to libraries in hill stations with temperate climates or placed in special buildings in which complete air control can be maintained.

SEVERAL distinctive features are embodied in a new model radioscopic couch by Messrs. Newton and Wright, Ltd. The tube-box, which is fitted with a holder to take a gas tube or Coolidge tube, is covered by sheet-lead and mounted upon steel rails, free movement being ensured by ball bearings The diaphragm is of the rectangular type, and is operated by levers attached to a control arm; this latter projects horizontally from the tube-box, and is supported by one of two metal uprights which hold the protective apron in position. A further feature of interest is that these uprights allow the tube-carriage to be shifted longitudinally by the operator's knees, which should at times be found a great convenience. Protective devices figure conspicuously in this new model.

REMARKABLE developments have taken place in the use of water-power in many parts of the world during recent years, with which English engineers who have not time to consult foreign publications are unfamiliar, and in which English manufacturers have taken but little interest. The possibilities of development in this country and in other parts of the Empire of the sources of water-power are awakening an interest in the subject, and the proposed issue by Messrs. Henry Frowde, and Hodder and Stoughton, under the editorship of Prof. S. M. Dixon, of a quarterly *Journal of Hydraulics*, at an annual subscription of 31*s*. 6*d*., each number of which will be self-contained and will make available in a convenient form details of the most recent developments of hydraulic engineering, should prove of interest and value to many engineers. A sufficient number of guaranteed subscribers is required before the first issue.

DR. ARNE WESTGREN has carried out some Röntgen spectrographic investigations of iron and steel in the University of Lund, Sweden, and presented his results at the May meeting of the Iron and Steel Institute. He has verified Hull's result that iron at ordinary temperatures (α iron) has a cube-centred cubic lattice structure, the edge of the unit cube being 2·87 Å. He finds that between 800° and 830° C.—that is, within the so-called β-iron range—the atoms are oriented in exactly the same way as in α iron, the edge of the unit cube being 2·92 Å. If allotrophy is accepted as being the same as polymorphy for solid crystalline bodies, this means that β iron cannot be considered as a separate modification. On the other hand, both in pure iron and in austenite at 1000° C.—that is, in the γ range—the crystals have face-centred cubic lattices, the edge of the unit cube being 3·61 Å. Consequently, this is characteristic of γ iron, and a fundamental crystallographic difference exists between α and γ iron. In martensite, the constituent of hardened carbon tool-steel, Dr. Westgren has found that the iron is in the α form. This is also the case in high-speed tool-steel hardened at 1275° C. The investigations are being continued, and will be extended to include complex phases in steel and other alloys. Spectrograms of cementite show that its crystal structure is related to that of γ iron, a fact which explains the mutual solubility of these phases.

LISTS Nos. 182 and 183 of the Cambridge and Paul Instrument Co., Ltd., give particulars respectively of the Cambridge microtomes and the Cambridge recording clinical thermometers. The firm now manufactures three types of microtomes. The universal microtome, on a circular cast-iron base of 250 mm. diameter, is constructed on similar principles to the Cambridge "rocker," but has a wider range of application; it cuts sections of 0·001 to 0·035 mm. in thickness from objects up to about 18 by 20 mm. in diameter embedded in paraffin or celloidin. Since the object moves in a horizontal plane along the arc of a circle, it has the advantage that the sections are flat. The rocking microtome is similar in general construction to the instruments manufactured in previous years, but with improvements in details; it will cut sections 0·002 to 0·024 mm. in thickness from paraffin-embedded objects up to about 12 by 20 mm. in diameter. The freezing microtome has been specially designed for use in operation work. The thermometers, which give continuous automatic temperature records extending over a considerable period, are of the electrical resistance type, and consist essentially of a bulb containing a coil of platinum wire joined by connecting wires to a recorder. The record consists of a series of dots on the chart-paper, impressed every minute or half-minute as is desired.

Two correspondents have forwarded further suggestions for picture-hanging wire in reply to the letter under that title published in NATURE of May 19 last. The first relates to the use of single-strand enamelled phosphor-bronze wire of No. 18 B.W.G. This has been found satisfactory for pictures of moderate weight. The other method, similar to that described in NATURE of May 26, p. 395, is to use ordinary copper bell wire 0·055 in. to 0·02 in. in diameter. Pictures varying in weight from 1 lb. to 50 lb., using two wires for the heavier pictures, have been hung successfully with it. The need for straightening the wire carefully is emphasised in both letters, and the advisability of avoiding sharp bends at the edges of hooks is mentioned.

MESSRS. W. HEFFER AND SONS, LTD., Cambridge, have in the press a work, to be published in three parts, entitled "Dates and Date Cultivation in the 'Iraq," by V. H. W. Dowson, of the Agricultural Directorate of Mesopotamia. The three sections comprising the work will deal respectively with the cultivation of Basra date palms and the marketing of the fruit; statistics and details of the experiments from which the average yield of date gardens per acre is adduced; and the varieties of date palms found at Basra. Part iii., which will be illustrated, is promised for the coming autumn.

Our Astronomical Column.

PONS-WINNECKE'S COMET.—Mr. W. F. Denning writes:—"On May 28 this comet was conspicuously visible in a field-glass. The comet is at present situated in the Milky Way amongst the stars of Cygnus, and is moving to the south-east at the rate of about 3½° per day. It is increasing in apparent brightness, and may possibly come within naked-eye vision at the middle of June. The latest observations prove that the comet is farther from the earth than was expected, and that at perihelion it will be about 2,000,000 miles outside the terrestrial orbit. Perturbations by Jupiter in 1918 have altered the cometary path and lengthened the period of revolution. There may be a meteor shower on the nights from June 27 to 30, but the conditions are such that the display may not be a very brilliant one. Observations should be carefully made at the period mentioned, and it is fortunate that the evening sky will be free from moonlight."

SPECULATIONS ON THE FORMATION OF SPIRAL NEBULÆ.—M. Alex. Véronnet contributes an article on this subject to the *Comptes rendus* of the Paris Academy of Sciences for April 18. He examines the effect that would result from the impact of the two components of a binary system. He shows that the energy produced by friction at their surfaces is the most important factor, and that a mass equal to that of Jupiter might produce by impact with the sun a temporary increase of light amounting to twelve magnitudes. Radiation-pressure would then expel the heated particles with high speeds, and the revolutionary movement of the stars would give a spiral formation to the scattered particles. The author seeks thus to explain the phenomena both of novæ and of spiral nebulæ. He concludes that the latter would undergo a rapid evolutionary transformation (in the course of a few centuries). It would seem, however, that the larger spiral nebulæ are on too grand a scale to be the product of the impact of a mere pair of stars. The hypothesis is, however, worth considering in relation to such nebulæ as that which was revealed round Nova Persei by the light of the outburst, and Hubble's variable nebula in Monoceros.

M. Véronnet quotes the results obtained by Mr. Van Maanen, from photographs taken at intervals of several years, on the movements going on in certain nebulæ. These showed an outward tendency, agreeing with M. Véronnet's conclusions.

The nebula round Nova Persei had evidently been present, though unseen, before the outburst, and the suggestion had already been made that it might be the product of a former impact of the same two bodies that caused the outburst of 1901.

THE COMPANION OF *α* HERCULIS.—In the course of a paper on "Seven Spectroscopic Binaries" (*Astrophysical Journal*, April) Mr. R. F. Sanford announces that the fainter star of this well-known pair is a spectroscopic binary with a period of 51·6 days, only one spectrum being visible. He further announces that the radial velocity of the centre of gravity is −37·2 km./sec., whereas that of the principal star of the visual pair is −32·2 km./sec. Mr. Sanford concludes from this that the visual pair is only an optical one, the components not being physically connected. The following considerations, however, appear to show that this conclusion is unwarranted:—

The chance of two unconnected stars of magnitudes 3·5 and 5·5 being within 5″ of each other and having the same proper motion of 3″ per century in the same direction is so small as to be absolutely negligible. Moreover, the assumption of physical connection does not involve an unreasonable value of the masses. The spectroscopic parallax of component B is 0·018″ and the angular separation 4·7″, or 260 astronomical units (if unforeshortened); a joint mass equal to that of the sun would give a relative velocity in a circular orbit of 1·84 km./sec. The actual relative velocity is 5·0 in the line of sight and 1·6 at right angles, the position angle having altered by 6° in eighty years. The combined velocity is 5·25, giving a joint mass of $(5{\cdot}25/1{\cdot}84)^2$, or 8·14 times that of the sun. We know of many greater stellar masses; for example, in a paper by Herr P. Hügeler in *Astr. Nach.*, No. 5098, the masses of the components of *α* Herculis are calculated to be 7·43 and 2·84 in terms of the sun.